rest of it. With a brief sketch of the lower Amazon and lower Rio Negro, he begins his story of the trip at Santa Isabel nearly half way up the Rio Negro. With the same promptness, the best of the book—the part which treats of the trip across from Santa Isabel to Ciudad Bolívar on the lower Orinoco—comes to a living end at 4:30 A.M., after his long voyage, when "my canoe grated the sloping bank of Ciudad Bolívar, and I stood upon the beach, bare-legged to the thighs, looking, no doubt, in tattered shirt, like a derelict cast up by the sea."

The remainder of the book is only remotely related to this first and most important part of it, but it is all interesting. Chapter XIX., however, at the end, relates to outfitting for travel in tropical regions and is the best thing of the sort we have seen; and in the opinion of the reviewer the best things among the many valuable suggestions are these: go light, eat what the natives eat, sleep in a hammock, avoid liquor, don't scratch insect bites. He forgot to add: "Learn the language of the people."

This last point suggests that the book contains a few errors in Portuguese which a little care might have avoided. Such are "batelão" for batelão, "Rio Janeiro" (74, etc.) instead of Rio de Janeiro, "cachaca," rum, for cachaça (43, etc.), "igarapee" for igarapé (47–49), "madrugar" for madrugada (84).

There are also a few erroneous statements in regard to plants which it is hoped may be corrected in future editions: that *farinha de mandioca* is made from the root of a yucca (33); that *piassava* is a "fiber parasite" of a palm (118); that Panama hats are made of "the fine and enduring straw" of a palm. As a matter of fact the piassava fiber is from the edges of the petioles of the palm, and is in no sense a parasite, while the straw of which the hats are made are from the leaves of a species of screwpine.

On the other hand he does well to correct the impression, so popular in temperate regions, that South America swarms with snakes; and he justly discredits the exaggerated stories to be heard all over South America of the numbers and dangers of the jaguars. He does well also to mention the everlasting stumbling blocks placed in the road of the foreign wayfarer (213)—an item the foreigner should be prepared for before he begins his wayfaring.

In his preface Mr. Whitney speaks rather lightly of the fevers and intimates that they belong to the category of robbers and reptiles (4). Having come safely out of some of the most unhealthful parts of South America, it is natural enough for him to think lightly of the fevers. But when he takes a serious view of the possibilities of the region about San Fernando he finds himself confronted by "the insect host and the fever—a forbidding pair" (111).

The writer is in entire sympathy with this author's general cheerful attitude in regard to the people and their ways and the country in general, but he thinks it due to those who are likely to go there to call attention to the abundant evidences of fevers and of their sad work as set forth in "Recollections of an Ill-fated Expedition," etc., by N. B. Craig, Philadelphia, 1907, and indeed in the experience of every one who has lived long in that country.

It is a pity that the book is not supplied with better maps.

J. C. Branner

MINERALOGY IN JAPAN

The valuable Japanese periodical issued in Tokyo by T. Wada, under the German title "Beiträge zur Mineralogie von Japan," offers many interesting articles in its fourth number (June, 1912), all of them being written in English by their Japanese authors. Among them we note an account of the fall of meteorites which took place July 24, 1909, in the districts of Mugi and Yamagata, province of Mino.[1] The writer, Tetsugoro Wakimizu, states he was at the time in the town of Ogaki, about twenty miles distant, when he heard a sound like the report of a cannon, accom-

[1] "Beiträge zur Mineralogie von Japan," ed. by T. Wada, No. 4, pp. 145–150, 1 pl., 1 map; Tokyo, June, 1912.

panied by quite noticeable vibration; indeed, the noise was heard over an area of nearly 4,400 square miles. The ground on which this, the most remarkable fall of meteorites noted in Japan, took place, was of elliptical outline, measuring about 7½ miles in length and 3 miles in width. The writer carefully examined 24 of the 25 stones gathered from this field, and he estimates that probably five times as many are still lying in the fields and between the hills. He notes that fewer but larger stones came from the northern part of the territory than from the southern part; the largest weighs a trifle over 89 pounds (1,076.8 *momme* = 40,389.7 grams). All these stones, probably fragments of a single original mass, are a white chondrite with some minute grains of nickel iron and iron sulphide in the interstices between the stone components. Oxidization was very rapid. These meteorites are holocrystalline, consisting of prismatic crystals and grains of olivine and bronzite. The primary crust, from ⅓ to ½ mm. in thickness, is formed of oxidized grains of nickel iron and iron sulphide.

The following gives the results of an analysis of one of these meteorites (Hachiman) by Sugiura in the Imperial Geological Survey of Japan:

H_2O	0.334
SiO_2	41.012
P_2O_5	0.458
TiO_2	0.416
F_2O_3	5.470
Fe	20.583
Ni	0.183
Mn	0.910
CaO	2.768
MgO	24.707
S	2.185
SO_3	0.201
C	trace
Total	99.227

The meteoric iron "Okano" is also described by Tadasu Hiki, and figured on two plates.[2]

The most important article in the number is an account of the mineral resources of the Island of Formosa, ceded to Japan after the war with China in 1895.[3] Gold is present there in fair quantity, the principal mines being near Kiirun. The Chinese carried on gold mining in Formosa as early as 1669, and gold sand was noted on the east coast by the Portuguese in the fourteenth century. The gold deposits near Kiirun were discovered in 1890 by a Chinese who came across gold sand while work was in progress on a bridge over the Kiirun River. The value of the gold obtained in Formosa by the Japanese in 1910 is stated to be 2,119,981 yen or over a million dollars; of this 63,964 yen represented the worth of the placer gold.

Gem minerals are represented to a somewhat limited extent. Chalcedony, white and red-banded, has been found in volcanic rocks at Kappansha and in the Tartō district, and in basaltic cavities in the Hōko-tō group; red, yellow, brown, blue, green and other colors are represented; some specimens here are large enough to be polished for ornamental use. Associated with these latter chalcedonies, attractive semi-transparent opals have been found, sometimes blue and occasionally gray. Minute crystals of zircon occur in the gold placers of the Kiirun River. Red garnet appears in fragments with gold sand and magnetite on the coast of Dainan-ō, and minute garnet crystals occur embedded in crystalline schist at Basshi-sho.

Other articles in this number are: "On the twelve dimples of the aragonite balls, found in Taira, Shinano," by Nobuyo Fukichi, pp. 133–138; "On a Small Sinter-cone Formed by a Geyser at Obama, Hizen," by Denzō Sato, pp. 139–141, pl.; "*Kurokō*, or the Black Ore," by Takeshi Hirabayashi, pp. 151–156. Many interesting data are also grouped under the general heading, "Kleinere Mitteilungen."

A concession for pearl-fishing in the South Ussuri district of western Siberia was recently accorded by the Russian government to A. D. Popoff, of Vladivostok. This field is now being exploited with some success with the aid

[2] *Loc. cit.*, pp. 142–144; plates VII. and VIII.

[3] Yōhachirō Okamoto, "Minerals of Taiwan (Formosa)," *loc. cit.*, pp. 157–188.

of trained divers from European Russia, and the prospects for a satisfactory yield of pearls are considered to be good.[4]

Geo. F. Kunz

SPECIAL ARTICLES

THE DOCOPHORI OF THE OWLS

Exactly a dozen species of *Docophorus* (genus of Mallophagan parasites) have been described from the owls (*Strigidæ*). I think the number is about double what it ought to be. The species center about three well-known and well-differentiated types, represented by the long-established species, *D. rostratus* Nitzsch, *D. cursor* Nitzsch and *D. ceblebrachys* Nitzsch. The name of Nitzsch means that these three species were described about a hundred years ago and were based on specimens derived from European birds. All of these species have since been taken from North American owls, as well as from owl hosts from other parts of the world.

The three species differ markedly from each other in various characters, the most quickly recognizable of which are the shape and markings of the head. In *rostratus* the clypeal portion of the head is drawn out and narrow in front, in *cursor* it is shorter and broader, and in *ceblebrachys* it is still shorter and broader, so that the head is a sort of broad, solid, bull's head. The species might well have been named *taurocephalus,* a name used later by me for another *Docophorus.*

Of the nine other so-called species of owl *Docophori* three have been described from American specimens, viz., *D. syrnii* by Packard from *Strix varia varia* from Ohio; *D. bubonis* by Osborn from *Bubo virginianus* from Pennsylvania, and *D. speotyti,* also by Osborn, from *Speotyto cunicularia hypogæa* from Nebraska and Colorado. *D. syrnii* Packard is unrecognizable. It does not count. Professor Osborn's two species do count, of course. They belong to the *cursor* type of owl *Docophori* and are very partial, indeed, to this type, for they imitate their European model pretty closely. However, Professor Osborn's specimens are different from Nitzsch's. But that is a conspicuous thing about the Mallophaga. The individuals of the same species, when they are taken from different host individuals, reveal easily perceived differences. It is a condition that comes about, probably, through the unusual isolation of the separate groups of individuals that compose the species. Each group, which is at bottom a family group, and represents a family strain, is more or less effectively marooned on an animated island, which is the body of its individual bird host. And hence the variations of each family strain are preserved and accented by the necessary inbreeding due to this isolation.

Thus while Professor Osborn's *cursor*-like species are different, they are not *very* different, and the same is true of several other species of owl *Docophori* representing not only the *cursor* type but the *ceblebrachys* and the *rostratus* type.

I have just received from Professor Cockerell several specimens of *Docophorus* from *Asio flammea* (collected at Boulder, Colorado) and in attempting to determine them I am interested to discover that if I follow tradition I shall have to add another species of *Docophorus* to the list for the owls, which would make the thirteenth! This makes me hesitate. What I believe ought to be done is to let these new specimens unite some friendly but now separated species, instead of compelling them to make the situation more intolerable. For to recognize thirteen species of one Mallophagan genus from thirteen species of owls—for that happens to be the exact number of owl species from which *Docophori* have been taken—and four of them from a single owl kind, would be unnatural, and also most inviting of ill luck! I am sure of the unnaturalness from my knowledge of the host distribution of the Mallophaga. The trouble is that the isolation of the *Docophorus* (and other Mallophagan) individuals on owls is even more effective than on most other birds, for owls are peculiarly non-gregarious and

[4] Report of Consul John F. Jewell, of Vladivostok.